

## A New Species of *Anombrocheir* Buckett and Gardner from the Inner Coast Ranges of Northern California<sup>1</sup>

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In a recent paper (Buckett and Gardner, 1969) we described *Anombrocheir*, a new genus of xystodesmid milliped. Since the submission of that manuscript, an additional new species has been collected and is assignable to this genus.

Differences in the new species make it necessary to redefine the genus *Anombrocheir*. As can be seen by the illustrations of the gonopods (Figs. 2 and 3), the telopodite of the new species is bifurcate (thus the derivation of the specific name), unlike the massive entire telopodite of *A. spinosa* Buckett and Gardner.

The distribution map (Fig. 1) indicates that *Anombrocheir* is known to occur only in the inner coast ranges of northern California. The habitat of the new species is the same as that of *A. spinosa*, and a discussion of this habitat was presented previously (*ibid.*, p. 72).

The key to California genera of Xystodesmidae presented by us (*ibid.*, pp. 67 and 69) will require emendations due to information presented in Causey and Tiemann (1969) and in this paper. These changes will be incorporated with new information in a future paper.

### *Anombrocheir* Buckett and Gardner

*Anombrocheir* Buckett and Gardner, 1969. Ent. News, 80(3): 69-70.

Diagnosis: Body 23-33 mm in length and 4.8-6.5 mm in width; color a light yellowish-gray dorsally, with orange on tips of paranota and epiproct.

*Description*.—Head smooth and shining, with prominent coronal suture; antennae reaching back to the fifth segment along paranotal margins.

Tergites smooth, paranota well developed, extending ventrolaterad from mid-body height, with anterior lateral margin rounded and posterior corners acute, though not produced much caudad; collum narrow, about one-third as long as broad, with anterior margin curving evenly back, posterior corners equal to posterior margin of collum. Sterna low mesally, distinctly produced laterally, a transverse groove present between legpairs of each segment. Legs long, with femur extending beyond lateral margin of segment; leg segments unmodified except for moderate prefemoral spine; second and

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third legs of male each with a pair of cylindrical ventral processes; second legs of female with a prominent pair of elongate coxal projections.

Gonopod socket large, sub-oval in shape, with posterior rim raised height of one coxal width; gonopods large, with coxae broad and joined together with a distinct sclerotized sternal connective which is surrounded by connective tissue and situated just distad of coxal muscles; telopodite joined to coxa distally by movable joint at oblique angle; telopodite massive, longer than coxa and lacking long processes; apex with curved flange or short processes; seminal canal coursing almost directly up mesal surface, ending in a small solenomerite.

Type species: *A. spinosa* Buckett and Gardner, by original designation.

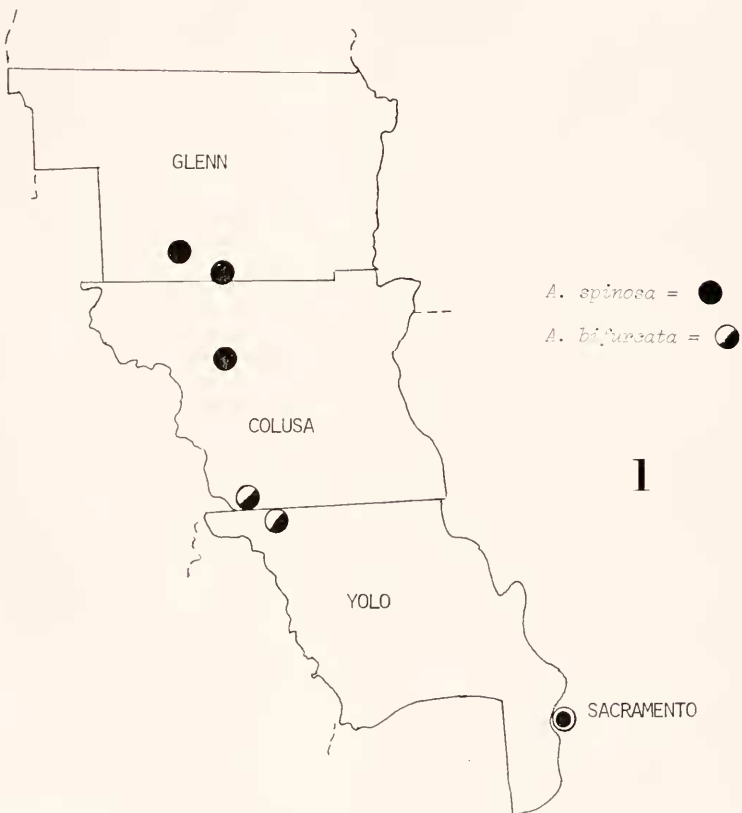


FIG. 1. Distribution map of *Anombrocheir spinosa* and *A. bifurcata* in the inner coast ranges of northern California.

**Anombrocheir spinosa** Buckett and Gardner

*Anombrocheir spinosa* Buckett and Gardner, 1969. Ent. News, 80(3): 70-71.

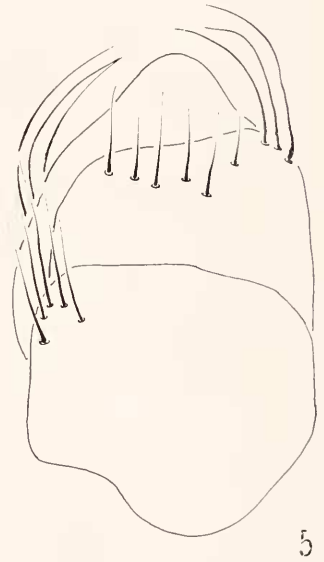
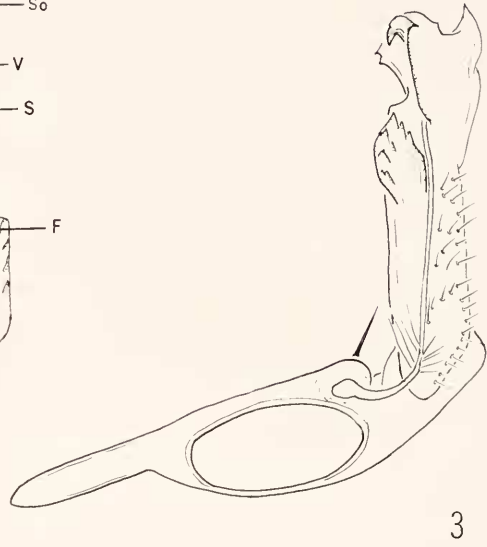
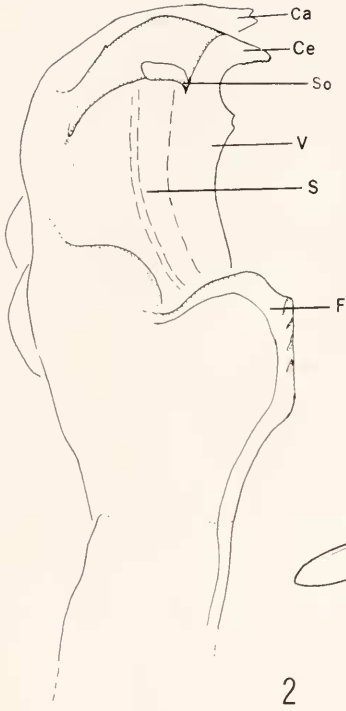
Additional record: 3 males, 10 females, 1 immature, 7.7 miles north-east Stonyford, in Colusa County, California, 23 March 1968 (J. S. Buckett and M. R. Gardner).

**Anombrocheir bifurcata** Gardner and Buckett, NEW SPECIES

Diagnosis: Differs from *A. spinosa* mainly in the gonopods, in which the telopodite possesses a lobelike femoral process; gonopod apex distinctly bifurcate, both short processes acute and curved mesad.

*Description*.—Holotype male, 28 mm in length; 6.0 mm in width. Coronal suture prominent, ending abruptly above antennal sockets, two prominent setae located on each side; vertex smooth and shining, but etched with many minute transverse impressed striae; frons with a pair of setae dorsally between antennal sockets, a pair just below antennal sockets and separated by a distance equal to two-thirds the intersocket distance, and a row of six setae on each side near ventral margin of frons; clypeus with a transverse row of 25 setae; labrum with a transverse row of 22 setae; gula with a broad, shallow groove parallel to lateral margin of facial shield; a distinct supra-antennal groove present; antennae moderate in length, reaching caudad to fifth segment along lateral margins of paranota and separated by a distance equal to second antennal segment; first antennal segment cylindrical, not longer than width of socket, with two dorsal and two ventral subapical setae exceeding width of segment; second segment three times length of first, proximal part half width of first, but apical part equal to it in width, with numerous short setae along dorsal and ventral margins and four long apical setae; segments three to five setose, subequal in shape, narrower proximally; segment three subequal in length to two, segments four and five slightly shorter; segment six the longest, cylindrical, about half as wide at base as apex and covered with fine setae; seventh segment subhemispherical, with four sense cones inset at apex.

Tergites smooth dorsally, except for many minute longitudinal impressed striae; lateral extensions of paranota with subcuticular reticulations, paranota projecting slightly ventrolaterad from midbody height and each exceeding width of body cylinder by about 30% of the cylinder; paranota slanted, with posterior margin higher than anterior margin; collum with anterior margin broadly rounded covering back of head; posterior corners of collum rounded, not projecting beyond posterior margin of segment; collum short, about one-third as long as broad; following seven segments with anterolateral corners increasingly rounded, posterior corners produced; segments 8 to 19 with anterolateral margins of paranota broadly rounded, with the posterior corners acutely rounded and produced distinctly caudad of segment; repugnatorial pores opening on dorsal side of lateral margins of paranota near caudal corner; segments 7 to 20 progressively reduced, with segment 19 greatly reduced, tergite narrower than distance between posterior corners of segment 18; epiproct subtriangular, its apex truncate and exceeding anal valves; epiproctal setae with two pairs of paramedial dorsal setae close to mesal line (one about midlength of segment, the other near apex), three setae along each lateral margin of tergite and two pairs of apical setae; anal valves roughened, anal lips produced and lined by two pairs of setae; hypoproct sub-lenticular, longer than half its width.



FIGS. 2-5.

Sternum of first legs not exposed between closely adjacent coxae; second through seventh segments with intercoxal area of sternum becoming gradually wider; following segments with sterna finely wrinkled, low mesally, raised out from body cylinder in lateral regions by one-third coxal width, a distinct transverse groove present between legpairs of each segment; pleural area smooth; anterior stigma of each segment elongate-oval, the posterior one subcircular and smaller.

Legs long and robust, femur exceeding lateral margin of paranota, coxae separated by slightly more than two coxal lengths; second coxa with small, rounded caudal process; third coxa with rounded, anteroventral lobe; succeeding legs with coxa short, slightly flattened, densely setose; prefemur about 1.3 times length of coxa and slightly broader, with a distinct ventral apical spine; femur very narrow basally, widening to three times basal width at apex, about 1.2 times length of prefemur; postfemur shorter and narrower than coxa, and tibia of same proportions, but shorter and narrower yet; tarsus subcylindrical, more densely setose than previous segments, shorter than prefemur, with a large, slightly curved claw equal to almost half the length of tibia; femur and tarsus becoming exaggerated in length near posterior end of body, tarsus subequal to previous two segments in length and femur almost twice length of tarsus.

Gonopod socket suboval in shape, with a low anterior rim and raised posterior rim, socket extending cephalad through two-thirds of prozonite and caudad to eighth sternum, its width slightly narrower than distance between lateral margins of eighth coxal sockets.

Gonopods very large, telopodites produced cephalad to anterior margin of sixth segment; coxae erect, longer along lateral margin than along mesal margin; anteriorly, coxae joined at apex of mesal margins by distinct oval sternal remnant and a translucent band of connective tissue beneath sternum; coxae connected posteriorly by abundant transverse muscle tissue; telopodite joined to coxa by movable hinge which flexes longitudinally, permitting a vertical- or anterior-facing position of the telopodite; telopodite massive, exceeding coxa in length, with segmentation obscured; from anterior aspect telopodite narrowing just beyond origin then gradually widening until wider than coxa; numerous long setae generally distributed on posterior surface and on mesal surface near origin; rounded lobe produced mesad from anterior surface beyond middle of telopodite, its mesal surface marked with prominent vertical striations; vertical flange produced on mesal surface of telopodite, extending from point caudad of mesal lobe to apex; apex of telopodite distinctly divided into two short processes; a caudal process ending in a prominent mesal spine and a cephalic process receiving the vertical flange, ending in acute mesocaudal spine, and bearing small subapical anterior solenomerite; solenite emerging from coxa anteriorly, entering seminal canal on mesal surface of telopodite, proceeding caudad of mesal lobe and cephalad of vertical flange to solenomerite.

Specimens examined.—CALIFORNIA: holotype male, 8.5 miles northwest Rumsey, in Colusa County, 19 January 1969 (M. R. and R. C.

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FIGS. 2-5. FIG. 2. Holotype male, *Anombrocheir bifurcata*. Anterior aspect of apical half of telopodite of left gonopod. Ca = Caudal process; Ce = Cephalic process; F = Femoral lobe; S = Seminal canal; So = Solenomerite; V = Vertical flange. FIG. 3. Holotype male, *A. bifurcata*. Left gonopod, mesal aspect. FIG. 4. Paratype female, *A. bifurcata*. Left cyphopod, anterior aspect. FIG. 5. Paratype female, *A. bifurcata*. Left cyphopod, mesal aspect.

Gardner). Paratypes: 6 males, 3 females, same data as holotype; 15 males, 12 females, 8.6 miles northwest Rumsey, in Colusa County, 12 February 1969 (J. S. Buckett and M. R. Gardner); 1 male, 5 females, 3.3 miles northwest Rumsey, Yolo County, 19 January 1969 (M. R. and R. C. Gardner); 1 male, 3 females, 3.5 miles northwest Rumsey, Yolo County, 12 February 1969 (J. S. Buckett and M. R. Gardner).

#### DISCUSSION

The holotype will be placed in the Arthropod Type Collection, Department of Entomology, University of California; Davis; paratypes will be deposited in the United States National Museum, Washington, D. C., and in the authors' private collection.

Although there are strong differences between *spinosa* and *bifurcata* in the details of the gonopods, the basic structure is quite similar. In *spinosa* the femoral region is greatly thickened, and in *bifurcata* this thickened region is produced as a lobe. The vertical flange of *bifurcata* is produced almost identically in *spinosa*. The gonopod apex of *spinosa* is much larger than in *bifurcata* and the solenomerite is developed as a broad flange rather than a small acute spine. The prominent caudal process of *bifurcata*, however, possesses no apparent equivalent in *spinosa*.

In the female of *bifurcata*, the cyphopods closely resemble those of *spinosa* from caudal aspect. From mesal aspect, however, one sees that the caudal surface of the valve curves mesad, covering most of the surface. Unfortunately, the large proximal sclerite shown in Fig. 5 was removed from the cyphopod of *spinosa* as illustrated in our previous paper (Buckett and Gardner, *op. cit.*, Fig. 3), making comparison difficult. The cyphopods in this genus exhibit pronounced variability, and are not satisfactory in themselves for species identification.

All collections of *A. bifurcata* were made in Cache Creek Canyon. Ecologically, it was interesting to note the high density of the Western Banded Glowworm, *Zarhipis integripennis* (Le Conte), which preys upon *A. bifurcata*. At the locality 8.5 miles northwest of Rumsey, in Colusa County, where the milliped population was heavy, the authors observed that approximately one-third of the population suffered predation by the Western Banded Glowworm.

In several instances, the larvae of *Z. integripennis* were observed to be either alongside or inside the millipeds. The position of the larvae and mode of entrance into the millipeds agrees with the information given by Tiemann (1967, p. 257). The large female larvae possibly feed on millipeds other than *Anombrocheir*, as their size is greater in length and width than specimens of either species of *Anombrocheir*.

## LITERATURE CITED

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## The Entomologist's Record

To encourage the publication of concise and useful new distribution records, corrections of previously published erroneous records, misidentifications, short field notes, and current news items about entomologists, amateur and professional, entomology departments and museums, prompt (monthly) publication is offered in this department.

**A Geometrid Moth Hitherto Unrecorded from the United States.**—On April 15, 1966, I took two females of a moth unknown to me at light in the hardwood hammock on Key Largo, Florida. They seemed to belong to the subfamily Sterrhinae of the family Geometridae. The moths had a wingspan of about one-half inch, and had a striking forewing pattern of light olive green with a dull scarlet median band; the hindwing was concolorous whitish. Although I kept them alive for oviposition, no eggs were laid.

Later that year I received from Mr. Charles P. Kimball of Sarasota, Florida, a series of 35 males and 13 females of this species, all from Key Largo. He was unable to identify them, and had received them too late for mention in his *Lepidoptera of Florida* (1965).

In attempting to learn if this were an undescribed species, I sent specimens to Mr. D. S. Fletcher of the British Museum. He identified the species as *Acratodes oblinataria* Möschler, described from Puerto Rico. Furthermore, he found that the Florida material compared favorably with the subspecies *scintillans* Warren, described from British Guiana. A third name applied to the species is aberration *fasciata* Prout, of which Caracas, Venezuela, is the type locality. The three names seem to reflect slight differences in maculation, especially expression of the median band. Some variation in this band was seen in the series before me, indicating a possible source of confusion; however, none of the Florida specimens have the band almost wanting, as is the case with some neotropical specimens in the National Museum of Natural History. The species is widely distributed in South America and the Caribbean area, although its full range and life history are not recorded.

The specimens sent by Kimball were all but one taken by Mrs. Spencer Kemp in 1965 and 1966 in every month except March, May, and September; however, *oblinataria* can probably be found on Key Largo throughout the year. The other specimen is the earliest known from Florida, taken by H. V. Weems, Jr., July 20, 1962. These specimens are in the Kimball collection.